

## Lab Problem 2

You will be given four solutions in plastic, thin-stem, Beral-type pipets labeled A, B, C, and D. The solutions contain either HCl or NaOH in the concentrations listed below. Each acid solution also contains phenolphthalein.

### Possible Acidic Solutions

1.00 *M* HCl  
0.500 *M* HCl  
0.100 *M* HCl

### Possible Basic Solutions

1 *M* NaOH  
0.5 *M* NaOH  
0.1 *M* NaOH

The most concentrated acid in your group of four solutions has been carefully standardized. Use this solution to determine the precise concentrations of the most dilute basic solution.

In your lab notebook:

- Make sure you provide a detailed explanation of your procedure (a list will suffice)
- Show all your calculations, as well as the reactions.
- State the identity and concentration of solutions A, B, C, and D

If you need more solutions, they will be provided. Carry out all of your experimentation in a 24-well plate.